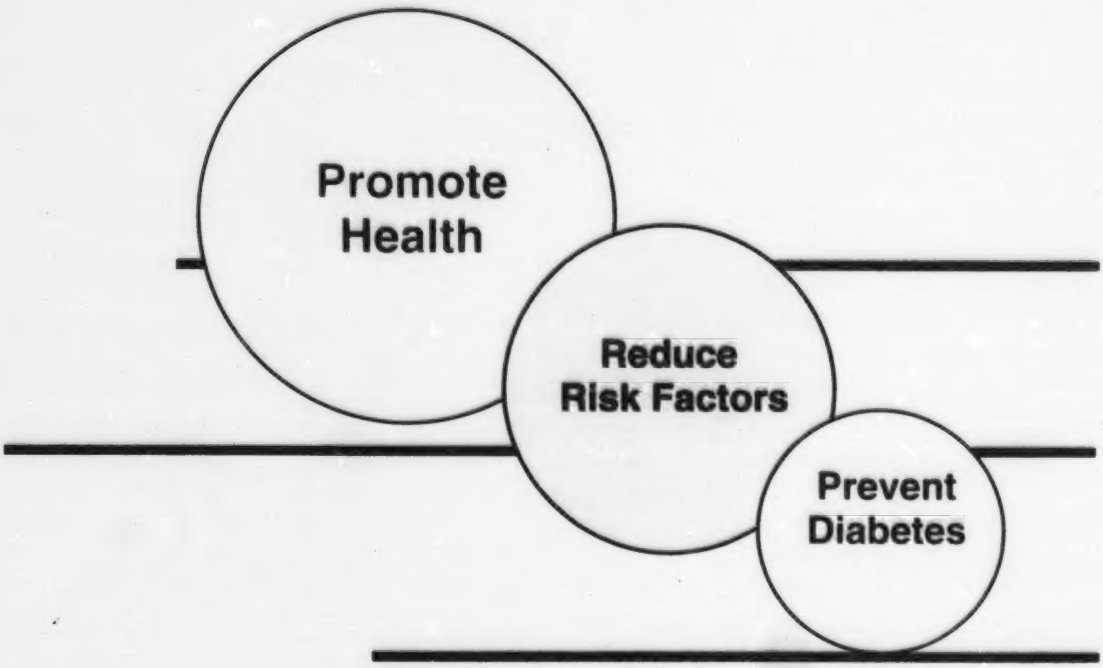
Preventing Diabetes in Atlantic Canada



A report prepared by Susan Lilley for
The Population and Public Health Branch
Atlantic Regional Office
Health Canada

June 2000

Health Canada Santé Canada

Canada

The opinions expressed in this publication are those of the author and do not necessarily reflect the views of Health Canada.

Également disponible en français sous le titre **Prévenir le diabète au Canada atlantique**.

Readers may reproduce this document in whole or in part. Please credit the source as follows:

Preventing Diabetes in Atlantic Canada. 2000. Produced by S. Lilley for the Population and Public Health Branch, Atlantic Regional Office, Health Canada.

103-00244/

ACKNOWLEDGEMENTS

This document was written by Susan Lilley and produced under the guidance of the Atlantic Region Federal/Provincial Diabetes Committee, which includes:

Andrea Aucoin, Population and Public Health Branch, Atlantic Region, Health Canada
Allan Corbett, Department of Health and Community Services, Newfoundland
Peggy Dunbar, Diabetes Care Program of Nova Scotia
Gisèle McCaie-Burke, Department of Health and Wellness, New Brunswick
Jane Oram, Population and Public Health Branch, Atlantic Region, Health Canada
Laraine Poole, Department of Health and Social Services, Prince Edward Island

The epidemiological data were provided by Mike Pennock of the Population Health Research Unit, Dalhousie University. Glenda Dell, Provincial Diabetes Program of PEI, Stacey Lewis, Cape Breton Wellness Centre, and Judy Purcell, Canadian Cancer Society, generously gave of their time to test an early draft of the diabetes prevention survey. An earlier draft of this report was reviewed by members of the Atlantic Region Federal/Provincial Diabetes Committee as well as Neala Gill, Canadian Diabetes Association, Jane Farquharson, Heart Health Nova Scotia, and Glenda Dell.

The work would not have been possible without the generous and patient contribution of both time and expertise by many, many people from all four Atlantic provinces. We thank you all.

The Population and Public Health Branch, Atlantic Region

EXECUTIVE SUMMARY

Diabetes is a serious public health issue, a condition that can and often does lead to heart attack and stroke, blindness, kidney disease, nerve damage and amputation. It is estimated to account for as many as 25,000 deaths per year in Canada. The condition is even more prevalent in Atlantic Canada than in the country as a whole, and appears to be increasing more rapidly here. This is not surprising, given that the region also ranks poorly in levels of obesity and physical inactivity, the two modifiable risk factors for Type 2 diabetes, the focus of this report. In our region, four of every ten adults are overweight and six of every ten do not get enough physical activity, figures that are substantially higher than in the rest of Canada. When combined with a more rapidly aging population, increasing rates of obesity and diabetes will pose a serious challenge not only to the individuals and families affected, but also to the entire health care system. It is a critical situation that requires immediate and concerted action.

At the population level, Type 2 diabetes can be prevented by reducing levels of physical inactivity and obesity. A population health approach to diabetes prevention is aimed at reducing the exposure of the entire population to the underlying causes of inactivity and obesity. Because most of these causes are outside the health sector, bringing about change in these areas requires that strategies be developed and implemented in close collaboration with other sectors. The recreation and food/food service industry sectors are both central to the environmental changes that need to take place for success in preventing diabetes. A population-wide reduction in diabetes will require a long-term commitment in many sectors and a succession of diverse strategies carried out over many years. Successful strategies for promoting population health include: building healthy public policy, creating supportive environments, strengthening community action, developing personal skills and reorienting health services.

An environmental scan was carried out in the region in order to gain a better understanding of the existing infrastructure for the primary prevention of Type 2 diabetes. This study found that until now, preventing diabetes has not been a high priority in the region, although many organizations carry out prevention activities. Several organizations in each province are using a population health approach to reduce inactivity or obesity at either the regional or provincial level. Work in this area appears to be somewhat more advanced in the area of physical activity and the recreation sector. Most of the population-wide, multisectoral initiatives are in the early stages of development and have not yet acquired funding or developed strategies. A few are coming to the end of their funding.

For most other initiatives, however, working to increase the knowledge and skills of individuals is still the primary approach to bringing about behavioural change. Overall, few initiatives are multisectoral and even fewer involve both the recreation and health sectors working together. There are very few partnerships with the food industry. According to respondents, the greatest obstacle to primary prevention is insufficient resources, both human and financial.

Results of this environmental scan indicate that the population health approach to preventing diabetes is a new way of thinking for many people in the region. To translate this new way of thinking into new ways of acting, it will be necessary to increase the level of commitment and capacity within the organizations that are doing the work. A successful diabetes prevention strategy will thus require concentrated efforts to increase the capacity of organizations and individuals to work in collaboration with other sectors and to create environments and conditions that encourage healthy choices. These efforts must include training, resource material, access to information about what works, and adequate financial and human resources to reorient, coordinate and implement primary prevention programs.

The results also suggest that diabetes prevention will require two separate but related strategies, one for each of the two modifiable risk factors. In every province intersectoral partnerships to reduce inactivity have been created in response to a national policy framework, and work is well underway. Although these partnerships are an important first step to preventing diabetes, they will need to take strong, sustained and well-designed measures in order to bring about measurable changes in behaviour. To do so they will need both political and financial support.

Province-wide intersectoral partnerships for improving nutrition are not as well developed. In some provinces, heart health projects have developed strong partnerships and implemented strategies within a single health region. This expertise and the infrastructure that has developed over the past decade are important resources for provincial strategies to address nutrition or obesity. However, achieving a measurable, population-wide impact on obesity will require a policy framework that provides political and financial support to build capacity and coordinate the work of many organizations.

The Canadian Diabetes Strategy provides an excellent opportunity to improve population health for the new century. Given adequate support, there already exists within the region all of the resources required to prevent Type 2 diabetes. Major steps taken now will require additional funding, but to do nothing will in the end cost far more. A concerted effort to prevent inactivity and obesity now will bring results that extend far beyond diabetes to the prevention of other non-communicable diseases. In so doing, it will improve quality of life and reduce health care costs for decades to come.

TABLE OF CONTENTS

Executive Summary i

Introduction 1

Section One: A Population Health Approach to Diabetes 3

Section Two: Current Status: Diabetes in Atlantic Canada 8

Section Three: Current Prevention Activity 14
Survey Method 14
Survey Response and Limitations 16
Survey Results 18
- Activity aimed at preventing diabetes 19
- Activity aimed at reducing the risk factors for diabetes 20
- Activity aimed at improving health and well-being 23
- Initiatives aimed at specific populations 24
- Approaches for bringing about change 26
- Capacity for partnerships and intersectoral collaboration 28
- Challenges and barriers to primary prevention 29
- Upcoming initiatives 30

Conclusions of the Survey 31

Section Four: Concerted Action to Prevent Diabetes 33
Conclusions 38

Endnotes 40
Bibliography 42

Appendix: Organizations that responded to the survey

LIST OF TABLES AND FIGURES

Table 1: Survey contacts and responses, by province or region. 17

Figure 1: Percentage of the population with diabetes 8

Figure 2: Percentage of the population with diabetes, by province, 1996/97 8

Figure 3: Percentage of different age groups with diabetes, 1996/97 10

Figure 4: Percentage of different income groups with diabetes, 1996/97 10

Figure 5: Percentage of the population with diabetes, by education,1996/97 11

Figure 6: Percentage of the population that is overweight, by province 1996/97 11

Figure 7: Percentage of the population that is inactive, by province 1996/97 12

Figure 8: Distribution of organizations that responded to the survey, by province or region ... 17

Figure 9: Overlapping objectives that contribute to the prevention of diabetes 18

Figure 10: Distribution of initiatives received in the survey, by objective 18

Figure 11: Distribution of provincial/regional initiatives received in the survey, by risk factor for diabetes 20

Figure 12: Populations addressed by the initiatives received in the survey, by life stage 24

Figure 13: Percentage of initiatives received in the survey that use each approach 26

INTRODUCTION

Diabetes is recognized as a public health problem of potentially enormous proportions. In Canada, at least 5,500 deaths per year can be directly attributed to this disease, which ranks as the seventh leading cause of death. Diabetes often leads to life-threatening and debilitating conditions such as blindness, kidney disease, nerve damage, amputation, heart attack and stroke. When deaths due to all of these complications of diabetes are included, diabetes is said to account for approximately 25,000 deaths per year in Canada[1].

Yet Type 2 diabetes, the most common form of the disease and the focus of this report, is largely preventable.[2] Primary prevention consists of increasing physical activity, establishing healthy eating habits and achieving and maintaining healthy body weight. Research has shown that these changes are effective in reducing the incidence not only of Type 2 diabetes, but also of cardiovascular disease, hypertension and other non-communicable diseases. Primary prevention requires a long-term, sustained effort but is clearly a good investment in our future.

In November 1999, the Government of Canada launched the Canadian Diabetes Strategy. Diabetes prevention is one of four components[3] of this comprehensive national initiative. This environmental scan is the first initiative of the Prevention and Promotion component of the strategy in the Atlantic region. It was commissioned by the Atlantic Regional Office of the Population and Public Health Branch of Health Canada to provide a foundation for planning strategies for the primary prevention of Type 2 diabetes. The environmental scan was intended to examine Atlantic Canada data relating to diabetes and to obtain information about major initiatives that contribute to the primary prevention of this disease. It was also intended to describe primary prevention of diabetes within a population health framework

This document is not intended as a comprehensive review of diabetes but rather as a tool for stimulating reflection, discussion and debate about strategies for action in the region. Section one describes a population health approach to diabetes. Section two, Current Status, provides a statistical picture of diabetes within the Atlantic region, while section three, Current Prevention Activity, describes the wide range of provincial or regional initiatives that contribute to the prevention of diabetes. Concerted Action, the final section, integrates the information included in the first three sections and identifies that the actions needed to launch a serious concerted strategy for preventing diabetes.

A Diabetes Primer

DIABETES is a condition in which the body either cannot produce insulin or else cannot effectively use the insulin it produces.

INSULIN is a hormone produced by the beta cells ot the pancreas that helps to regulate the amount of glucose in the blood. If the pancreas is unable to produce insulin, a person develops Type 1 diabetes and must administer insulin through injections. If the pancreas does not produce enough insulin, or the body cannot use the insulin that is produced, a person develops Type 2 diabetes and may require oral medication or insulin injections.

TYPE 1 DIABETES (previously known as insulin-dependent diabetes mellitus) occurs when the pancreas is unable to produce insulin. It is caused by the destruction of the beta cells in the pancreas by the body's immune system. It usually develops in childhood or adolescence but may appear at any age. At this time there is no known means of preventing Type 1 diabetes, therefore this document does not pertain to this type of diabetes.

TYPE 2 DIABETES (previously known as non-insulin-dependent diabetes mellitus) occurs when the pancreas does not produce enough insulin to meet the body's needs or the insulin is not used effectively. It is a highly preventable condition usually diagnosed after the age of 35. It accounts for 90% of all diabetes and is the form of diabetes discussed in this report. Type 2 diabetes is usually treated through healthy eating and physical activity, although some people must also take oral medication or insulin injections.

PRIMARY PREVENTION[4] of diabetes includes activities that are aimed at preventing diabetes from occurring in susceptible people or populations through modifications to the environment and changing behavioural risk factors. This covers any changes undertaken prior to development of clinical diabetes. There are two broad approaches to primary prevention of diabetes. One is the population approach, which targets risk factors in a whole population or group. The second is targeted towards reducing the risk factors for individuals.

SECONDARY PREVENTION of diabetes covers methods such as screening to detect diabetes as early as possible in order to reverse or halt side effects.

TERTIARY PREVENTION of diabetes includes any measure undertaken to prevent complications and disability due to diabetes among people who already have the disease.

section one
A POPULATION HEALTH APPROACH TO DIABETES[5]

Until now, most of the research and programming in diabetes have been oriented toward people who already have diabetes or who have early signs of the disease. The focus has been on treatment and/or lifestyle changes to prevent the development of further complications of diabetes. There has been little work on preventing diabetes from occurring in the first place in the population as a whole. This section outlines a population health approach for preventing Type 2 diabetes. It describes the characteristics of a population health approach, provides examples of strategies for action on diabetes and lists the key features of successful programs to change health-related behaviour.

Diabetes prevention begins with the known modifiable risk factors for Type 2 diabetes:[6] obesity and physical inactivity. Not surprisingly, these two risk factors are closely related:

Physical activity: A great deal of research[7] indicates that physical activity helps prevent diabetes in a number of ways - both directly, by improving insulin action, and indirectly, by reducing overall obesity and reducing the proportion of body fat in the central abdominal region. Physical inactivity is also a primary risk factor for coronary heart disease and there is also considerable evidence that even moderate physical activity reduces the risk of stroke, hypertension, osteoporosis and some types of cancer.[8]

Obesity: Obesity reduces the ability of cells to respond to insulin. As body weight increases so does the risk of diabetes. However, accumulation of body fat in the abdominal region seems to be even more predictive of diabetes and other non-communicable diseases than is obesity per se. Obesity also contributes indirectly to diabetes by limiting physical activity. The health consequences of obesity are many and varied; in addition to psycho-social consequences, they include coronary heart disease, hypertension, certain cancers, gall bladder disease, sleep apnea, low back pain and premature death. The increased proportion of fat in our diets (higher energy density) and our increasingly sedentary lifestyles are believed to be the major causes of the increase in average body weight of the population.

A population health approach to diabetes prevention means:

- Population-wide programming
- Reducing physical inactivity and obesity
- Acting on root causes
- Basing decisions on evidence
- Using multiple strategies
- Long-term planning
- Collaborating with other sectors

In general, there are two main approaches to tackling obesity and inactivity: those that aim to improve the knowledge and skills of individuals and those that aim to reduce the exposure of populations to the underlying environmental causes of these factors. In the past, most efforts have been directed at individual knowledge and skills, but this approach has not proved to be very successful in dealing with obesity and activity levels.[9] In a society that encourages unhealthy lifestyles, information and education don't have a fighting chance. Rather than focussing on educating individuals, the aim of a population health approach is to create environments and conditions that are conducive to maintaining an active lifestyle and healthy eating habits, thus making it easier for everyone to make healthy choices. A population health approach to preventing diabetes is aimed at the entire population, rather than individuals,[10] and has the following characteristics:

O Population-wide programming

A population health approach is aimed at improving health in the entire population (or large sub-populations, for example, all Aboriginal people). This approach recognizes that small changes made by most people will have a much greater impact on the overall health of the population than will large changes made by a few people. The aim is healthy lifestyles in a healthy environment. An environment that promotes physical activity and optimum nutrition will help prevent those at high risk from developing diabetes, while also preventing those at low risk from becoming high risk.

O Action on root causes

A population health approach looks at the root causes of illness and at the conditions that create health. It asks why people are inactive and overweight, and acts on the environments and conditions that influence lifestyle choices and health outcomes. Creating environments that support active lifestyles and healthy weights requires that we look at and act upon the broad range of factors and conditions that have a strong influence on health. These factors, referred to as *determinants of health*, include adequate income and social status, employment and safe working conditions, social support networks, and supportive physical and social environments.

O Evidence-based planning

A population health approach requires that policy and program decisions be based on sound evidence. There are three essential information sources for planning decisions:[11] statistical and demographic data that describe the situation, evidence of what works based on published research, and community knowledge.

O Intersectoral collaboration

A population health approach recognizes that the health sector alone can't accomplish population-wide changes. Because many of the conditions and factors that determine health are outside the jurisdiction of the health sector, those working in the health sector must forge new strategic relationships with groups not normally associated with health but whose activities have an impact on health. Two important sectors for preventing diabetes are the fitness/recreation sector and the food industry. The food industry – producers, processors, distributors, retailers and restaurateurs – is the key strategic partner for efforts to reduce the energy density and fat content of the food supply. These are only two of the many sectors that must be involved in efforts to reduce diabetes. Other essential partners include the social services and education sectors, both of which aim efforts at families and children.

O Multiple strategies and sustained effort

A population health approach recognizes that population-wide change takes time and that no single intervention will be successful. Achieving population-wide change requires a long-term commitment that includes multiple interventions carried out in a coordinated way at different levels over a period of time. Strategies for promoting population health include: building healthy public policy, creating supportive environments, strengthening community action, developing personal skills and reorienting health services.[12] Below are some examples of strategies that might contribute to the prevention of diabetes:

Building healthy public policy:

- require that workplaces provide physical activity breaks
- require that schools increase time for physical activity
- remove deep-fat fryers from school and workplace cafeterias
- require warnings on labels of high fat foods

Creating supportive environments:

- make quality fresh fruits and vegetables available in low income communities at a not-for-profit price
- promote healthy nutrition in grocery stores, schools and workplace cafeterias
- provide free access to community recreational facilities
- build more parks and green spaces
- develop walking and bicycle trails

Strengthening community action:

- form and support a network of community-based organizations and services committed to improving nutrition or physical activity
- provide support for a community volunteer group working to develop a cross-country ski trail
- bring together a group of interested youth and facilitate their process to increase physical activity opportunities for youth in a rural community

Developing personal skills:

- develop an educational campaign to enable people to read and understand food labels
- teach young people to cook nutritious, low-fat foods
- provide outdoor leadership training for youth

Reorienting health services:

- increase the share of health dollars going to primary prevention activities
- provide training to staff and volunteers in the skills required to promote population health
- mandate a local health service, such as a diabetes education centre, to work with local community groups to promote walking clubs
- mandate a provincial diabetes care program to coordinate a provincial intersectoral group to prevent obesity.

According to the World Health Organization,[13] successful public health campaigns for changing behaviours have had the following common features:

Elements of Successful Programs:

- Adequate duration and persistency
- A slow and staged approach
- Legislative action
- Education
- Advocacy
- Shared responsibility by consumers, communities, food industry and governments

Adequate duration and persistency: Successful programs take up to ten years to show measurable results.

A slow and staged approach: Campaigns to change a single behaviour require a series of strategies staged over time to support the transition through the stages of change from pre-contemplation to actual change and then maintenance.

Legislative action: Laws have proved successful when combined with education, for example, laws that require seat belt and helmet use and laws against drunk driving.

Education: Education alone is unlikely to succeed. When combined with other strategies, however, it encourages and supports behavioural change and reduces the feeling that change is being imposed.

Advocacy: Strong and widespread advocacy has been a key feature of successful campaigns against smoking and second-hand tobacco smoke.

Shared responsibility by consumers, communities, food industry and governments: Individuals are not the only ones who need to change. Governments, corporations and communities also need to make changes to support individual change.

These features of successful programs complement the population health approach outlined above. Taken together, these two sets of criteria provide an excellent road map for developing programs and strategies to prevent diabetes in Atlantic Canada. In addition, they provide an overview of the kinds of new knowledge and skills that both professionals and community volunteers require in order to promote population health.

section two

CURRENT STATUS: DIABETES IN ATLANTIC CANADA

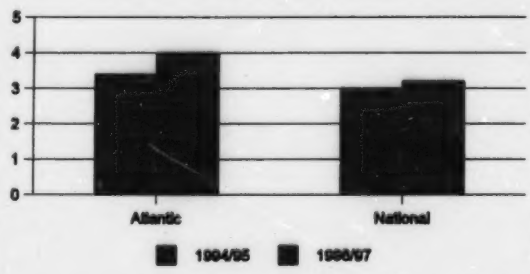


Figure 1: Percentage of the population with diabetes.

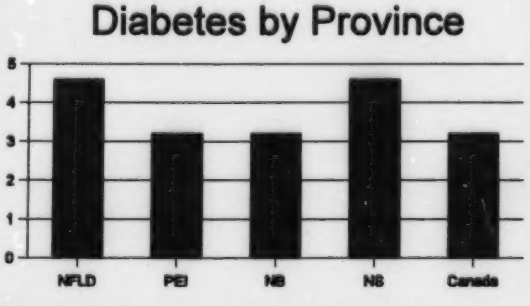


Figure 2: Percentage of the population with diabetes, by province, 1996/97.

A population health strategy to prevent diabetes requires statistical data that describe the current situation and help to monitor change as the strategy unfolds. This section provides an overview of statistical data on diabetes in Atlantic Canada. It compares rates of diabetes among various population groups and provides insight into inactivity and obesity in the region. Unfortunately, current data sources cannot provide us with everything we would like to know about diabetes in the region. Most notably, information is not available regarding minority population groups such as the Nova Scotian Black community. It is anticipated that this type of information will be more readily available once the National Diabetes Surveillance System[14] is up and running.

Unless otherwise stated, the data presented here are drawn from the 1996/97 National Population Health Survey[15] (NPHS), with some reference to the 1994/95 survey. The NPHS is the only up-to-date source of diabetes data that allows for provincial comparisons and for comparisons over time. The survey asked people the question, "Do you have diabetes that has been diagnosed by a health professional?"

It is important to note that the 1996/97 NPHS does not include people living on reserves, military bases or in institutions. With this

limitation and the reality that much diabetes is undiagnosed, the prevalence rates presented here are an underestimation of the true rate of diabetes. The technical report *A Diabetes Profile of Atlantic Canada*[16] provides a more complete description of diabetes in the Atlantic region. More detailed estimates have been carried out in some provinces using administrative databases.[17]

Underestimation of the Prevalence of Diabetes

The Third National Health and Nutrition Examination Survey (NHANES III), carried out in the United States, suggests that approximately 35-44% of all people who have diabetes have not been diagnosed. This is a gross estimate and may not reflect the Canadian reality.

Prevalence of diabetes

The prevalence of diabetes in Atlantic Canada is higher than in the country as a whole and is slowly increasing. In 1994/95, 3.4% of Atlantic Canada respondents to the NPHS reported that they had been diagnosed with diabetes by a health professional. In 1996/97 this proportion increased to 4%. Both of these figures are slightly higher than those for Canada as a whole; the increase over time was also greater in Atlantic Canada (Figure 1).

This higher prevalence in Atlantic Canada appears to be primarily due to higher rates in Nova Scotia and Newfoundland, both at 4.6%. These rates are significantly higher than in Prince Edward Island, New Brunswick and Canada as a whole (all at 3.2%) (Figure 2).

Diabetes and gender

Males in Atlantic Canada are somewhat more likely than females to have diabetes. Of the people who said they had been diagnosed with the disease, 52% were male and 48% were female.

Diabetes and race

Due to small sample sizes, the NPHS provides only a rough estimate of the prevalence of diabetes in the Black and Aboriginal (off-reserve) populations, and this only at the national level. According to this study, the prevalence of diabetes by race in the national population is 3.2% of whites, 3.8% of Blacks and 5.4% of Aboriginal people not living on reserve. There is a perception[18] in the Nova Scotia Black community that the diabetes rate is very high, and plainly a need for research to investigate this perception.

Diabetes rates are very high among Aboriginal people. According to the Aboriginal People's Survey,[19] the overall prevalence of diabetes among Aboriginal people is roughly three times that in the general population. In Atlantic Canada the rate is estimated at 6.8%. In contrast to the white population, most (approximately two-thirds) of the Aboriginal people with a diagnosis of diabetes are women.

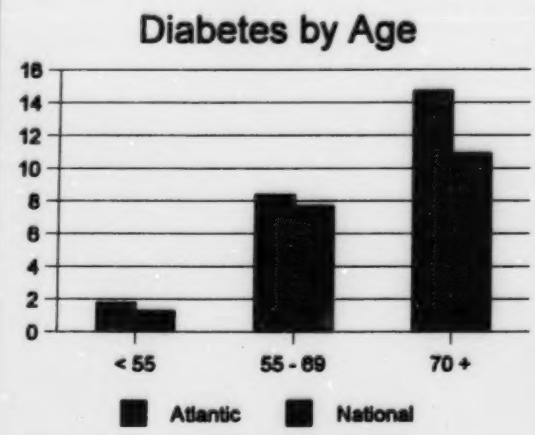


Figure 3: Percentage of each age group with diabetes, 1996/97.

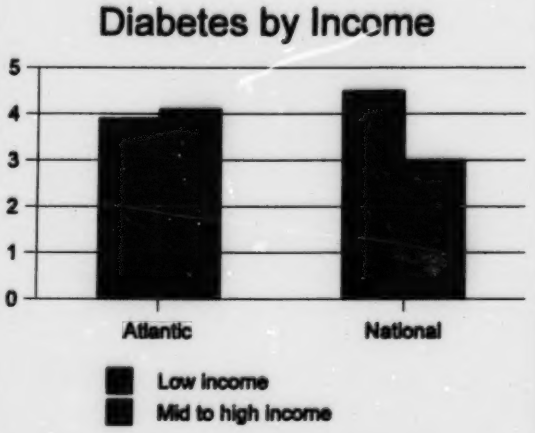


Figure 4: Percentage of each income group with diabetes, 1996/97.

Diabetes and age

Not surprisingly, the reported prevalence of diabetes increases with age. While less than 2% of those under 55 have diabetes, the prevalence increases to over 8% for those between the ages of 55 and 69, and nearly 15% for those aged 70 or over. The rate of diabetes in the population for those aged 70 or over in Atlantic Canada is 35% higher than the national rate (Figure 3).

Even so, most people with diabetes in Atlantic Canada are *not* elderly. This is because the elderly population makes up only a small proportion of the overall population. Two-thirds of the people who reported diabetes in Atlantic Canada are under age 70.

As the population of Atlantic Canada ages over the next three decades, the proportion of elderly people will grow rapidly. By 2036, it is expected that one out of three people in the region will be over age 65.[20] All things being equal, this has the potential to produce a tremendous increase in the number of people with diabetes.

Diabetes and income level

Diabetes affects both rich and poor in Atlantic Canada. Nationally, a larger proportion of people with low incomes reported having diabetes than did those with higher incomes. This was not the case in Atlantic Canada. In this region, lower income groups were less likely to report diabetes, while higher income groups were more likely to report the disease than in the country as a whole (Figure 4).

Diabetes and education level

People with less education are more likely to have diabetes. Nationally, the reported rate of diabetes was 1.9 times greater among people who have not graduated from high school. In Atlantic Canada it was only 1.4 times greater (Figure 5). This is because diabetes in Atlantic Canada is somewhat more prevalent among people with a high school education than it is in the rest of Canada.

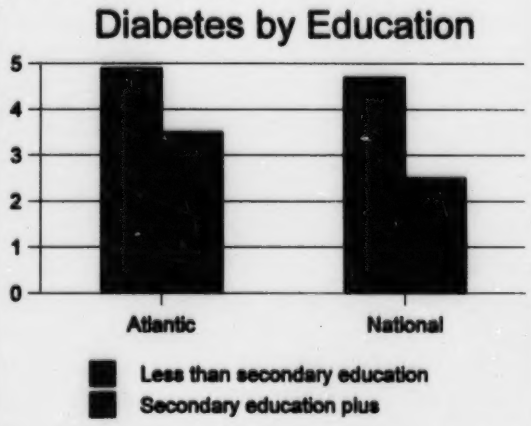


Figure 5: Percentage of the population with diabetes, by education, 1996/97.

Risk Factors for Diabetes

Obesity and physical inactivity are the two known modifiable risk factors for Type 2 diabetes. Atlantic Canadians rate poorly in both of these areas.

Obesity

Rates of obesity have been rising steadily across Canada and around the world since 1985. According to the NPHS, the proportion of adults who were classified as overweight (body mass index ≥27) was substantially higher in Atlantic Canada than in Canada as a whole. Close to 39% of respondents in the region were overweight, compared to 29% nationally. Higher levels were most apparent among young adults. Young men were more apt to be overweight than women. The rates in young women, however, showed the greatest deviation from national figures.

While there was some variation between provinces, the proportion of respondents who were classified as overweight in every

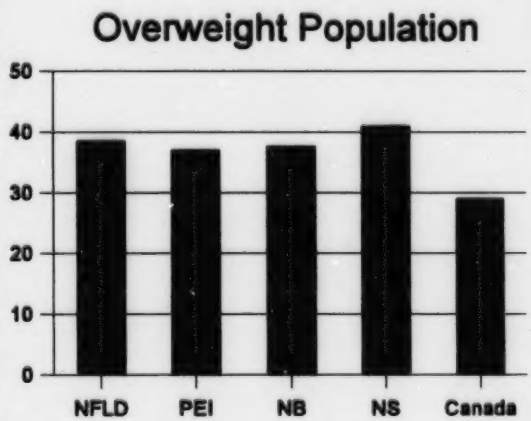


Figure 6: Percentage of the population that is overweight, by province, 1996/97.

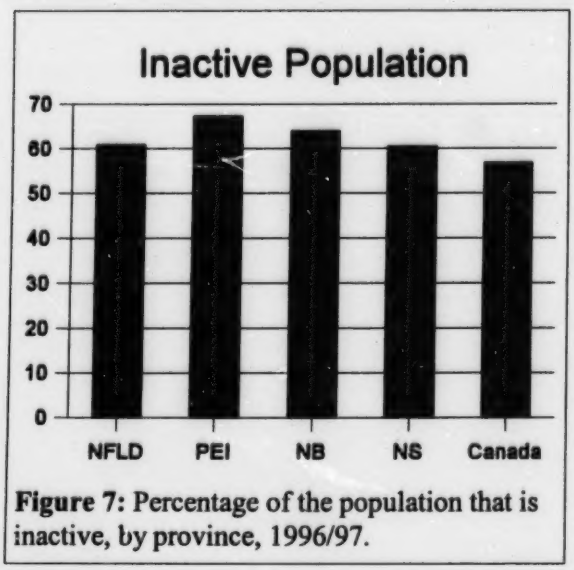


Figure 7: Percentage of the population that is inactive, by province, 1996/97.

Atlantic province was higher than the national rate: Nova Scotia (41%), Newfoundland (38.5%), New Brunswick (37.6%) and Prince Edward Island (37%) (Figure 6).

Like diabetes, obesity in Atlantic Canada is prevalent across income and education groups.

Inactivity

The rate of inactivity in Atlantic Canada is also higher than in the country as a whole. Just over 62% of respondents from the region were classified as inactive, based on reported participation in recreational and non-work-related physical activities. This compares to close to 57% nationally. Although the rate of reported inactivity was highest in Prince Edward Island (67.3%), all of our provincial rates were significantly higher than the national rate (Figure 7).

The Physical Activity Monitor[21] is an annual survey that estimates levels of inactivity in Canada. The 1998 data show that inactivity in adults increases across the country from west to east, with Newfoundland (67%), Nova Scotia (69%), New Brunswick (70%) and Prince Edward Island (73%) having the highest levels of inactivity.

Conversely, children in Atlantic Canada seem to be somewhat *more* active than their counterparts in other provinces. According to the 1998 Physical Activity Monitor, 57% of children aged 5-17 in the region were classified as not active enough. Although this figure is alarming, it is lower than the 61% found in the national sample.

Summary of Diabetes and Risk Factor Prevalence in Atlantic Canada

- Close to four out of ten adults are overweight.
- Close to six out of ten people, both adults and children, do not get enough physical activity.
- Diabetes is more prevalent in the Atlantic region than in the country as a whole and appears to be growing more quickly. This is primarily the result of higher rates in Nova Scotia and Newfoundland.
- The rate of diabetes among Aboriginal people in Atlantic Canada is close to double that in the overall population.

- Although the rate of diabetes increases with age, most people who have diabetes are not elderly.
- The prevalence of diabetes among elderly people is much higher in the Atlantic region than in Canada as a whole.
- Diabetes affects both rich and poor.
- People who have not completed high school are more likely to get diabetes.

section three

CURRENT PREVENTION ACTIVITY

The Canadian Diabetes Strategy is a new initiative but efforts to reduce inactivity, obesity and diabetes have been going on for many years. These problems are not new. A strategy to prevent diabetes can build on the initiatives, infrastructure and expertise that already exist in the region. This section presents the results of an environmental scan of the province-wide and regional organizations that currently work at preventing diabetes and of the activities and programs by which they do so. It provides a picture of the current diabetes prevention activity that will provide the foundation for a population-wide prevention strategy.

SURVEY METHOD

The environmental scan was carried out in May and June 2000 using a self-administered questionnaire aimed at organizations that play a significant role in preventing diabetes through activities to increase physical activity or improve nutrition. The questionnaire, which was available in French and English, included both open and closed questions. It gathered descriptive information about each initiative as well as information about partnerships, challenges and future plans.

The following criteria were used to select organizations to include in the scan:[22]

- Organizations must be doing work in areas that contribute directly to the primary prevention of Type 2 diabetes.
- Organizations must have diabetes, physical activity or healthy weight and nutrition as their primary mandate.
- Organizations must be from the Atlantic region.
- Organizations may be either non-profit or government agencies or academic institutions.
- Organizations must be provincial in mandate or be involved in significant regional activities.
- Relevant initiatives can include:
  - community programs
  - education
  - workshops
  - research activities

- conferences and professional development
- networking activities.

The target was to identify 60 organizations to be included in the scan. These were identified using a three-stage process:

- In the first instance, provincial members of the advisory committee were asked to provide names of a key informant in their province in each of three sectors: diabetes, physical activity and nutrition.

- Based on the committee's recommendations and other suggestions, unstructured telephone interviews were carried out with at least three key informants in each province, including at least one from each of the three sectors listed above. A total of 18 interviews were carried out at this stage. The purpose of these interviews was to obtain leads on relevant initiatives and to contact people in each province from each of the three sectors. These interviews resulted in a list of 65 definite contacts and 21 possible contacts for inclusion in the scan.

- Everyone on the definite list and many of those on the possible list were contacted and invited to participate in the scan. An attempt was made to speak with each one of them by telephone. Voice mail, fax or email were used in the very few instances when telephone conversation was not feasible. Contacts were asked whether their organization had any programs or activities for the prevention of inactivity, obesity or diabetes and if so to describe them. They were then asked whether they would be willing to fill out a survey describing the initiative(s). Most contacts agreed to look at the survey and to consider filling it out. It was sent to them immediately by fax or email. Several suggested others who should be contacted as well as or instead of themselves. In some cases it was decided that the initiative was not relevant to the scan and a survey was not sent. In total, 59 surveys were sent out. For close to 30 contacts, a questionnaire was not sent.

Those who agreed to fill out the survey were invited to complete one copy for each initiative that they would like to include in the scan. In some cases, contacts chose to distribute copies of the questionnaire to colleagues in regional/branch offices. Most organizations provided information on one initiative only, while a few returned surveys for up to eight different initiatives.

Challenges encountered in carrying out the study

The main challenge faced in carrying out the scan was deciding whether an initiative met the inclusion criteria or not. Initiatives aimed at prenatal nutrition, secondary prevention of diabetes, or the broader determinants of health were sometimes difficult to classify. In several cases contacts expressed interest in participating but uncertainty about the relevance or importance of

their initiative. In these cases the survey was sent out and the individual was given the choice of whether or not to fill it out.

A second challenge was the exclusion of local activities. In every province, most efforts to promote nutrition and physical activity are planned and delivered at the local level through schools, community hospitals, public health offices and municipal recreation departments. These programs are highly variable due to local and personal priorities and interests. While the overall impact of these programs is important, no attempt was made to capture all of these local and diverse programs in the scan due to the enormity of the task. Even so, some provincial contacts forwarded the questionnaire to their regional or local employees and asked them to fill it out.

For both of the above reasons not all of the initiatives described in the questionnaires returned fit the criteria outlined at the start. Nevertheless, every survey received contributed valuable information to the study.

SURVEY RESPONSE AND LIMITATIONS

Forty-two organizations responded to the survey by returning one or more completed questionnaires, for a total of 90 completed questionnaires. Several of those who did not respond to the survey were people who, after considering the request and reading the survey, decided that their work really is not relevant to primary prevention. All of the organizations that participated in the scan and the initiatives they described are listed in the appendix. Table 1 shows the provincial breakdown of contacts made, surveys sent out, organizations that responded and surveys received. Figure 8 illustrates the distribution of responses by province.

The conclusions of the environmental scan are based on the information that was received through both the survey and the interviews. A significant limitation of the scan is that not all of the organizations active in the region responded to the survey and that the response rate among provinces was uneven. Of those who did respond to the survey, some provided a great deal of detailed information while others provided very little. While it is recognized that not all significant initiatives were captured, the scan does provide a broad picture of primary prevention activity in the region.

Table 1: Survey contacts and responses, by province or region. (*Note:* Organizations with several initiatives completed more than one questionnaire.)

	ATL	NB	NFLD	NS	PEI	TOTAL
Organizations contacted	5	20	15	26	19	84
Organizations to whom questionnaires were sent	3	14	12	18	12	59
Organizations responding	2	10	6	15	9	42
Response rate	67%	71%	50%	83%	75%	71%
Questionnaires received	2	19	13	40	16	90

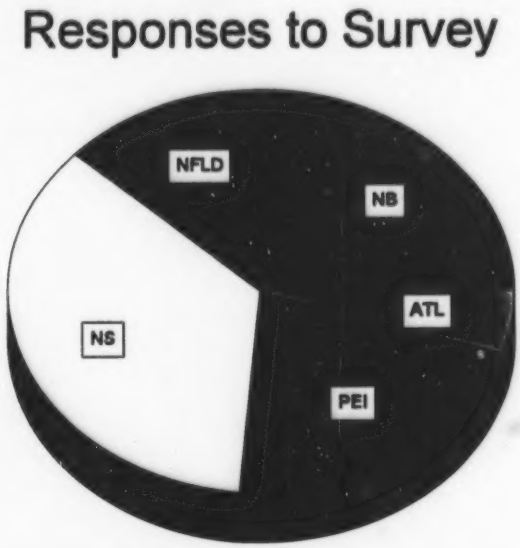


Figure 8: Distribution of organizations that responded to the survey, by province or region.

Figure 9: Overlapping objectives that contribute to the prevention of diabetes.

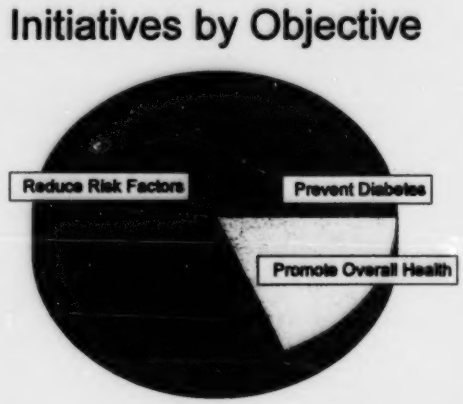


Figure 10: Distribution of initiatives received in the survey, by objective.

SURVEY RESULTS

One of the earliest and key findings of this environmental scan is that in fact very few organizations have initiatives that are specifically aimed at preventing diabetes. For this reason, the study looked for all major initiatives aimed at reducing physical inactivity and/or obesity.

Responses to initial contacts suggest that until now, people have not given much thought to preventing diabetes. When asked about initiatives to prevent diabetes, most people responded in one of two ways. Those currently working on diabetes responded to questions about their work on primary prevention with examples of secondary and tertiary initiatives, aimed either at screening for the disease or at preventing the onset of complications. On the other hand, people who are not working on diabetes tended to respond with details of programs promoting behaviour change on a variety of health issues, such as smoking, stress and breastfeeding, as well as those aimed more specifically at reducing physical inactivity and obesity.

While the study identified many initiatives aimed at reducing these two risk factors, it also found a number of other initiatives believed by the respondent to contribute to reducing obesity and inactivity. The results of the scan describe a range of overlapping objectives that all contribute directly or indirectly to preventing diabetes. These are illustrated in Figure 9.

This range is not intended to portray relative importance or effectiveness, but rather to

demonstrate the relationship between the objectives and to show that diabetes prevention activities are undertaken for different reasons. Although very few programs are designed to prevent diabetes, prevention nevertheless occurs. While the purpose of this study was to identify and describe organizations and activities aimed at the two inner-circle objectives, we also learned about twelve initiatives aimed at the outer circle objective. The latter initiatives are programs aimed at improving health and well-being in a broader sense and include programs aimed at healthy child development, as well as stress and smoking-reduction programs.

The data collected in the environmental scan were analysed and organized according to this range of objectives. Figure 10 shows the relative proportion of all the initiatives received in the scan that fit into each of the three concentric circles.

Activity Aimed at Preventing Diabetes

Organizations specifically concerned with diabetes are the provincial diabetes care programs and the provincial offices of the Canadian Diabetes Association (CDA). Until very recently, the CDA was not active in primary prevention; its efforts were directed instead at preventing the complications of diabetes (tertiary prevention) and at finding a cure for the disease. The CDA is now expanding its role in primary prevention at both the provincial and national levels, and a number of initiatives are in the early planning stages. These include national public awareness and workplace education programs, a trade-show-style public event, messages on milk cartons, and expanding prevention through community outreach volunteers.

Provincial diabetes care programs in Nova Scotia and Prince Edward Island have not yet played a key role in primary prevention. Their work to date has consisted of improving, coordinating and supporting the services that provide care for people with diabetes. Their role, however, is changing; the Diabetes Care Program of Nova Scotia, for instance, has recently added the goal of prevention to its overall mission.

The scan found only six provincial/regional initiatives that specifically focus on diabetes prevention, and three of these are still in the planning stage. Only one of the six initiatives involves a partnership, in this case with a private-sector funder. Four of the initiatives are the work of the provincial offices of the Canadian Diabetes Association and consist of prevention information included in educational displays and presentations about diabetes. This information is aimed at adults, seniors and the general public and is primarily delivered to small groups upon request. Another initiative, planned for fall 2000 in Newfoundland's Health and Community Services Eastern Region, is an education program on diabetes prevention aimed at two target groups, seniors and women. In Prince Edward Island, the current year's provincial budget includes funding for the primary prevention of diabetes in four health regions.

Activity Aimed at Reducing the Risk Factors for Diabetes

While few organizations work on diabetes prevention *per se*, many organizations have initiatives to reduce physical inactivity and obesity, or to improve nutrition, the major determinant of obesity. Such efforts contributed over two-thirds of the initiatives described in the scan. Of these, half were aimed at promoting physical activity; the remainder were equally divided between those aimed at improving nutrition or at both of these objectives together. This latter category included a few initiatives aimed specifically at reducing obesity. The relative proportions of the provincial and regional initiatives included in the scan that fall into each of these three categories are shown in Figure 11.

The three key sectors responsible for the prevention of physical inactivity and obesity are *recreation*, *health* and *not-for-profit health charities*. Organizations from these three sectors, in partnership with many other sectors, are therefore responsible for most primary prevention of diabetes in the region.

The fitness and recreation sector plays a central role in primary prevention of diabetes, even though preventing diabetes is not its primary purpose. Organizations from this sector were most often named by others in the scan as partners in primary prevention initiatives. A total of 17 different recreation-related organizations either responded to the survey or were named as partners. Key players are the provincial government departments responsible for fitness and recreation. In every province, these departments have initiated province-wide, multisectoral partnerships in response to the national challenge to reduce physical inactivity by 10%. In New Brunswick, Newfoundland and Nova Scotia partnerships are also being established to promote physical activity for people with disabilities, as part of the Active Living Alliance for Canadians with a Disability. Municipal recreation departments were named as important partners for regional primary prevention initiatives and for delivery of national and provincial initiatives.

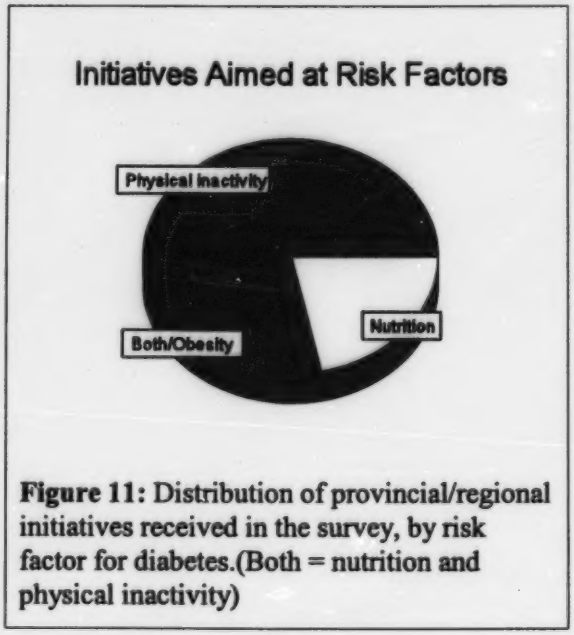


Figure 11: Distribution of provincial/regional initiatives received in the survey, by risk factor for diabetes.(Both = nutrition and physical inactivity)

The health sector is also very involved in reducing inactivity and obesity, with a few important differences. In the health sector initiatives are more often aimed at individuals and small groups rather than populations, there are fewer partnerships and province-wide initiatives, and less attention is given to environmental factors than in the recreation sector.

From a population-wide perspective, significant players in reducing physical inactivity and obesity are the heart health partnerships and a few diverse regional health promotion projects that have developed in each province. The heart health projects have developed multisectoral partnerships in Newfoundland, Nova Scotia and Prince Edward Island to increase capacity for promoting nutrition, physical activity and healthy weight. Once again, while diabetes prevention is not their purpose, each has set up the infrastructure to do just that.

Some of the important regional health promotion initiatives that contribute to reducing physical inactivity and obesity include:

- The Region Three Hospital Corporation in New Brunswick has a number of community-based programs aimed at promoting wellness and healthy weights among women, seniors and communities in general, as well as a coordinated diabetes screening and care system.
- Prince Edward Island's East Prince Health Region has hired a wellness coordinator and community dietitian. Initiatives include community and worksite wellness days.
- The Cape Breton Wellness Centre facilitates partnerships and collective activities in promoting community health, fitness and active living across Cape Breton, using a community development approach.
- Children Speaking Up is a federally funded initiative of Public Health Services, Northern Region, in Nova Scotia. This collaborative effort between the health and school boards is looking at school children's eating, physical activity and dental health practices.

The Heart and Stroke Foundation and the Canadian Cancer Society are also important players in reducing inactivity and obesity. Most active are the provincial Heart and Stroke Foundations, which were named as partners by many other organizations. As well as participating in partnership activities, the foundations offer a variety of programs and resources aimed at promoting nutrition, physical activity and healthy weight, including Workplace Wellness, Heart Smart Cooking, Hearts in Motion, Family Fun Pack, the Heart Smart Restaurant Program and a comprehensive Web site of prevention information. Initiatives of the Cancer Society include a nutrition education resource for grades 1-3 and a three-year program to promote increased consumption of fruits and vegetables.

Initiatives to reduce obesity

Fourteen province-wide or regional initiatives to reduce obesity (or to improve nutrition and increase physical activity) were found in the scan. These are being carried out by government, health charities, universities and the private sector and can be classified as either:

- educational resources, such as written material, Web sites, or speakers' bureaus
- broad community development programs involving multiple sectors and strategies
- individual risk assessment and counselling services
- small-group lifestyle programs for women concerned about their weight.

Among these were two province-wide initiatives specifically aimed at healthy weight:

- In May 2000, Cancer Care Nova Scotia and the NS Department of Health jointly sponsored a one-day workshop about current issues surrounding healthy weights for Nova Scotians, and the benefits, challenges and opportunities for collaboration. From this workshop a working group has been formed with the intention of developing a province-wide collaborative process to address healthy weights.

- In May 1995, the Newfoundland Department of Health commissioned a discussion paper on healthy weights, entitled *Achieving Healthy Weights Discussion Paper,*[23] to provide a sound rationale for coordinated action. In response to the document a resource called *Healthy Eating, Active Living, Diets Don't Work* was developed to provide a consistent message for use throughout the province.

The 14 initiatives to reduce obesity have a variety of specific target populations including adults, seniors, children and women; only two are aimed at the general public. As well as addressing nutrition, weight and physical inactivity, most of these initiatives take a healthy lifestyle approach that includes smoking reduction. A few also look at stress and a wide variety of other personal health-related issues. In addition, roughly half of these initiatives address two or more environmental factors. The environmental factors most often addressed are physical environments, social environments and social support networks. Four initiatives have a research component and six have or expect to have evaluation data to demonstrate their success.

Nearly half of the 14 initiatives to reduce obesity are carried out through partnerships and three of these are intersectoral, i.e., include three or more sectors. In all of these partnerships, most partners attend regular meetings, provide guidance and contribute resources. In only two do partners work on the initiative outside partnership meetings.

Initiatives to reduce physical inactivity

Twenty-six province-wide or regional initiatives to reduce physical inactivity were found in the scan. Most of these are initiatives of either government departments responsible for recreation or of provincial recreation associations. They can be classified as:

- intersectoral partnerships to reduce physical inactivity (in the general population, people with disabilities, children and youth)
- programs and resources to increase capacity to promote physical activity, such as workshops, funding programs, videos, marketing kits and leadership training programs
- initiatives to promote resources and programs developed nationally such as Summer Active and the Physical Activity Guide
- initiatives to develop and promote recreational facilities such as walking trails, bike ways, arenas and pools
- walking clubs.

Most are aimed at the general public, although children and youth are an important secondary target population. A few initiatives are specifically aimed at senior and/or adult populations. Three are aimed at people with disabilities or the people who work with them.

While reducing physical inactivity is the primary aim of all of these initiatives, roughly one-third also address nutrition and weight, and one-quarter address smoking. In addition to behavioural factors, most initiatives also try to improve physical environments, social environments and social support networks.

The primary approaches used by most of these 26 initiatives are public education and community capacity-building. In addition, nearly half are involved in advocacy to influence public policy. Eight initiatives have a research component ten either have or expect to have evaluation data to demonstrate their success.

Most of the initiatives to reduce physical inactivity are carried out through partnerships; nine are intersectoral. In most of these partnerships most partners attend regular meetings and provide guidance, contribute resources and work on the initiative between meetings.

Initiatives to improve nutrition

Eleven provincial or regional initiatives to improve nutrition were found in the scan. Most were initiated by government departments of health (provincial or regional) or health charities and include a wide variety of approaches to promoting nutrition, from nutrition counselling services and education sessions, to Web sites, cooking classes and curriculum resource materials for schools.

Most of the initiatives to improve nutrition are aimed at the general public. A few are aimed specifically at children and youth. Roughly half of these initiatives also address physical activity and healthy lifestyles or weight reduction. Only a very few address more than one environmental factor. The factor most often addressed is social support networks.

The approach used most often by these eleven initiatives to promote nutrition is public education. Two initiatives have a research component and three expect to have evaluation data to demonstrate their effectiveness. Four are carried out through partnerships, one of them intersectoral.

Activity Aimed at Improving Health and Well-being

Twelve provincial or regional initiatives aimed at promoting overall health and well-being also responded to the survey. Because the study did not set out to find this type of initiative, these 12 initiatives, shown as the outside ring in Figure 12, provide a very incomplete picture of this type

of activity in the Atlantic region. They do, however, provide insight into broader health initiatives that may prove to be an important part of diabetes prevention.

All but one of these are government initiatives and more than half are aimed at healthy child development, including prenatal care programs, a provincial breastfeeding strategy, an early childhood intervention program, a school feeding program, and a region-wide strategy to increase resilience of children and youth. Also included are community health working groups, a worksite wellness program, a cancer information hotline, and smoking reduction programs.

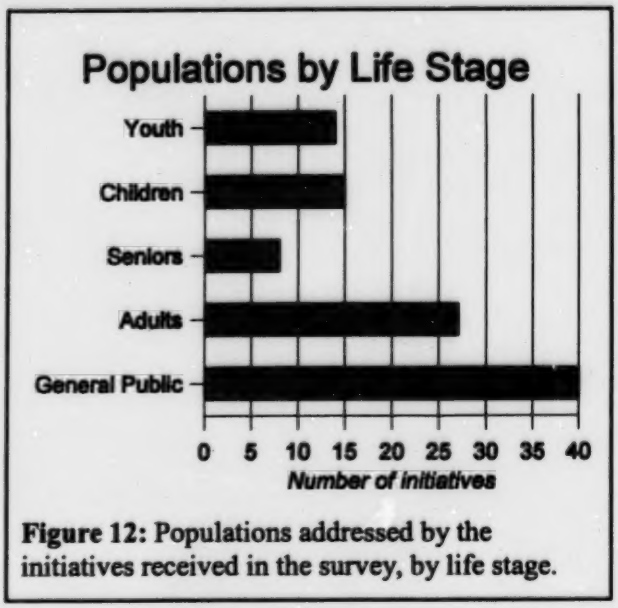


Figure 12: Populations addressed by the initiatives received in the survey, by life stage.

Although only half address physical activity or nutrition, these initiatives are more likely to address the broader environmental factors: most addressed social support networks, income and social status. Most of these health initiatives are carried out through partnerships, and six are intersectoral. However, in only half of these do partners attend meetings, work on the initiative or contribute resources.

Initiatives Aimed at Specific Populations

Well over one-third of all the initiatives in the scan are aimed at the general public and somewhat fewer are aimed at adults. Some initiatives, however, are aimed at more specific populations. Figure 12 shows the life stages addressed by the initiatives included in the scan.

Children and Youth

Fourteen of the initiatives are aimed at children and 13 target youth. Those aimed at children include early childhood intervention programs, school food programs and initiatives promoting physical activity for children. Most initiatives aimed at youth promote physical activity; others focus on leadership development, youth at risk or inclusion of youth with disabilities. Six of the above initiatives are aimed at both children and youth, and all but one of these are in Nova Scotia.

Children and youth are the prime target population for Physically Active Children and Youth (PACY), the partnership initiated by the Sport and Recreation Commission of Nova Scotia to reduce physical inactivity. This partnership is carrying out a pilot project to measure physical

activity levels in children and youth, and once the baseline data are obtained, will develop and implement strategies to reduce inactivity.

Children and youth are also the prime target population for Sharing Strengths: A Child and Youth Health Strategy (a project of Nova Scotia's Western Regional Health Board) and Collaborative Action for Healthy Weights (initiated by Cancer Care Nova Scotia and the NS Department of Health). Another initiative, *Activities that Work,* is an upcoming report of the Heart and Stroke Foundation of Nova Scotia that summarizes the features of successful programs that promote healthy lifestyles for children and youth.

Seniors

Eight initiatives, most of them in New Brunswick, are aimed specifically at seniors. The programs consist of walking clubs, group participation sessions, and individual assessment, referral and counselling services. Seniors are also an important target group for the Active Living Alliance for Canadians with Disabilities, a national organization with working groups in three Atlantic provinces. In New Brunswick, the Healthy Active Living Program for Older Adults is a province-wide, community-based, bilingual program designed and delivered by seniors. Through health education, personal empowerment, and prevention, the program is helping seniors improve their quality of life. In Newfoundland, the Department of Health and Community Services, Eastern Region, is planning a program aimed at seniors and women. Group education activities will address diabetes prevention with each of these groups, and individual follow-up of weight, blood pressure and blood glucose monitoring will be offered as required.

Women

Only five initiatives are specifically aimed at women and most of these deal with prenatal care and child feeding. One initiative, Healthy Weight/Scales Are for Fish, is offered in New Brunswick's Region Three. This program, developed in Ontario, helps women break the cycle of dieting by exploring body image and building a broad range of skills to enhance personal confidence.

People with a Disability

In three provinces, the Active Living Alliance for Canadians with Disabilities has working groups to promote physical activity among people with disabilities. The Newfoundland group is primarily a means of networking and communication between organizations that work in the areas of recreation and disabilities. In New Brunswick, the Alliance was set up for the purpose of exchanging information, training, mobilizing and community capacity-building. In Nova Scotia, the Alliance, through Recreation Nova Scotia, has held a provincial workshop on inclusion and developed an education video and facilitators' guide on including youth who have disabilities.

They are currently assessing the accessibility of recreational opportunities in the province and producing a second video, this one on including seniors.

Employees

Seven initiatives are delivered to employees at their worksite. Workplaces are one of four settings for the PEI initiative to reduce physical inactivity. Wellness Days, another PEI initiative, are held annually for employees of East Prince Health and include sessions on healthy nutrition, physical activity, tai chi, yoga, walking, reflexology, balancing work and family, and a wide variety of topics related to stress management. Wellness in the Workplace is an initiative of the Newfoundland Division of Recreation and Sport that provides consultation to worksites. One of these worksites is the Provincial Government Wellness Initiative, a major provincial initiative designed to promote wellness and all aspects of healthy lifestyles to 10,000 -15,000 public sector employees.

In Nova Scotia, the Atlantic Health and Wellness Institute (AHWI) provides comprehensive cardiac and pulmonary rehabilitation programs to employee groups on a fee-for-service basis. The AHWI's Project Impact is a study aimed at promoting employee health. The Institute is primarily active in the Halifax area, but eventually intends to include all of Atlantic Canada.

The Heart and Stroke Foundation of New Brunswick and the provincial branches of the Canadian Diabetes Association offer presentations to worksite groups upon request.

Approaches for Bringing about Change

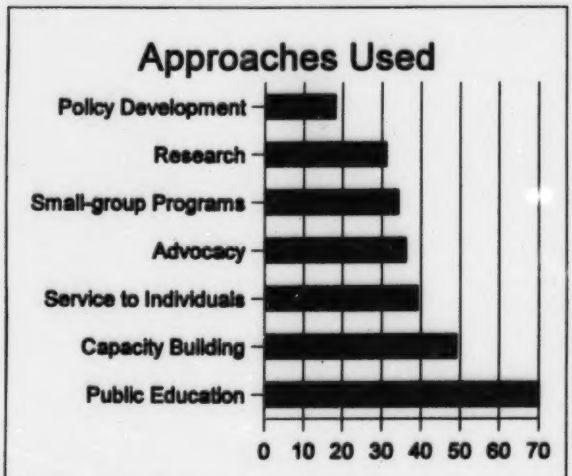


Figure 13: Percentage of initiatives received in the survey that use each approach.

The initiatives included in the scan use a variety of different strategies to try to bring about change. Just over half of the initiatives rely primarily on improving the knowledge and skills of individuals, while the remainder also use broader approaches. The most widely used strategy is public education (70%). Less widely used are community capacity-building (49%), service to individuals (39%), advocacy (36%), small-group programs (34%), research (31%) and policy development (18%). (Figure 13)

One organization, the Nova Scotia Heart Health Partnership, is unique among respondents in that its primary strategy is to increase organizational capacity for health

promotion and chronic disease prevention. With this approach, the partnership is improving the ability of many organizations and groups to plan, mount and sustain health promotion and disease prevention interventions using all of the strategies listed above.

Interestingly, nearly one-third of the initiatives included in the scan contain an element of research. These are either:

- province-wide initiatives of provincial governments such as An Active Healthy Province by 2003 (PEI), Collaborative Action for Healthy Weights (NS), Early Childhood Initiative (NB) and Wellness in the Workplace (NF)
- local or regional pilot or demonstration projects closely affiliated with a university, such as Active Transportation Pilot (NS), Programme Coeur en Santé (NB) and Healthy Communities in Action (PEI)
- university-based research done by graduate students, such as a study on the prevalence and incidence of diabetes in New Brunswick (University of Moncton) and research to compare the Canadian Physical Activity Guide Program and the Digi-walker Step Counter Program (Dalhousie University).

Only a few initiatives are developing public policy and these come from provincial government departments. Most of this policy development relates to promoting physical activity, while the remainder looks at nutrition-related issues such as prenatal care, breastfeeding and school nutrition. In addition, twice as many initiatives try to influence public policy through advocacy, which is used by a wide variety of initiatives from all sectors including government.

Most initiatives included in the scan reported that they address one or more of the environmental factors that contribute to health. Social environments, social support networks and physical environments are the environmental factors most frequently addressed, while income and social status, employment and working conditions, gender and culture are addressed by far fewer initiatives. Only 13 initiatives indicated that they do not address any of these environmental factors. However, it was clear from the variety of responses to the question on environmental factors that the meaning attached to the word "address" varies among respondents, ranging from "talk about", to "take into consideration", to "trying to change".

Twelve initiatives addressed five or more environmental factors. These are primarily overall health promotion programs that use a community development approach aimed at seniors, children or the general population. However, some worksite wellness programs also indicated that they were addressing most environmental factors.

Capacity for Partnership and Intersectoral Collaboration

Responses to the question on partnership suggest that there is no common understanding of the word "partnership" either. The types of partnerships described ranged from a formal collaborative arrangement among organizations, to an advisory group, to a working group within an organization, to funding relationships. Just over half of the initiatives included in the scan were carried out in some sort of partnership with other organizations yet only 18 partnerships overall (20%) involved more than two sectors.

A few vibrant intersectoral partnerships established to address the prevention of inactivity or obesity were found in every province. Financially, however, these partnerships are quite fragile. While the more established partnerships are nearing the end of their funding and their future is threatened, the newly established partnerships have not yet succeeded in acquiring funding to implement their strategies.

The capacity for partnerships appears to be greater overall among organizations promoting physical activity. Interestingly, there was little cross-over between the health and recreation sectors, with only 14 initiatives involving the health and recreation sectors working together in partnership. In most partnerships, most partners attend regular meetings and contribute either financially or in kind to the initiative. In only half do partners also work on the initiative outside of partnership meetings.

While most partners come from government and non-profit organizations in the health and recreation sectors, others come from education, the private sector, professional associations, municipalities, economic development and the criminal justice sector.

Education/universities: Thirteen initiatives named the education sector as partners, including provincial departments of education, school boards, home and school associations, teachers and guidance counsellors. Five initiatives named universities as partners; these include Acadia, the College of the North Atlantic and Dalhousie, Memorial and St Francis Xavier universities.

Private corporations: Only three of the initiatives working on nutrition (either alone or as part of an overall lifestyle approach) listed food industry partners. The partners are organizations of milk producers, produce marketers and restaurants. In total, six initiatives named private corporations as partners. These were mostly funding partners and include firms that sell gasoline, telephones, hiking equipment, food and beverages, health insurance and pharmaceutical products.

Environment: Three initiatives named environmental organizations as partners, including the Atlantic Coastal Action Program, the Clean Nova Scotia Foundation and the Community Animation Program.

Professional Associations: Professional associations of dietitians, home economists, recreation workers, nurses and physicians were named as partners for two prevention initiatives.

Challenges and Barriers to Primary Prevention

According to respondents, the one major barrier to primary prevention of diabetes is lack of resources, both human and financial. A few attributed insufficient resources to lack of organizational/political commitment to primary prevention. In Nova Scotia such respondents felt that primary prevention has not been a priority for regional health boards, which have been focussed on cut-backs to acute care.

Insufficient human resources were the most frequently noted resource challenge, with insufficient funding coming a close second. Respondents said they did not have either the time, the staff or the volunteers to attend adequately to primary prevention. They noted that the community development and partnerships required for primary prevention are time-consuming and results are slow to develop. Several mentioned that they rely on volunteers to do the work, yet have insufficient time and resources to recruit, train and support them. Reliance on volunteers to get things done was seen as a challenge in itself by a few organizations.

For many initiatives, funding for primary prevention is insufficient and unreliable. Some said that they are currently seeking funding either to keep the program alive or to expand it beyond a pilot site. Others said they do not have the resources to adequately promote their programs. Several mentioned their frustration with the lack of ongoing funding for health promotion and their need to re-frame their health promotion activities in terms of prevention of a specific disease in order to access funding. The following additional impacts of insufficient funding were also noted:

- annual stress, uncertainty and loss of momentum at budget time
- inability to adequately train staff and volunteers
- inability to evaluate programs
- accessibility of programs only to those who are willing and able to pay for them.

Challenges to Primary Prevention

Primary Challenge

Lack of resources
- insufficient human resources: staff time and skilled volunteers
- insufficient and unreliable funding

Secondary Challenges

Lack of understanding and skills to promote population health

Lack of coordinated strategic action on obesity

Two other challenges to primary prevention were mentioned far less frequently but are significant nonetheless. Several respondents working on weight and nutrition expressed the need for a more coordinated and strategic approach to the issue. They said that the field of nutrition is vast and that there are far too many issues to address on a piecemeal basis. They suggested that nutritionists are spread too thinly among a wide variety of diverse programs and therefore have a relatively small impact overall. They see a need to develop coordinated strategies to really make a difference in primary prevention of obesity.

Respondents also spoke of lacking the requisite knowledge and skills for a population health approach and the need to train both staff and community volunteers in the skills for promoting population health. They specifically mentioned the continuous challenge they face in trying to overcome the widespread belief that information and education alone can change behaviour.

Upcoming Initiatives

Most tentative plans for future province-wide primary prevention initiatives consist of expanding local or pilot programs to the rest of the region or province; funding for these is uncertain at this time. A number of new partnerships have not yet developed plans or acquired funding but intend to do so in the near future.

Many of the tentative initiatives focus on increasing physical activity:

- The province-wide partnerships formed in all four provinces in response to the national challenge to reduce physical inactivity by 10% are still at the planning stage and are seeking funding.
- In three provinces, the partnerships being formed to increase physical activity for people with disabilities are also just beginning to think about joint initiatives.
- Promotion of physical activity is gaining importance in the non-profit sector, as the Canadian Cancer Society adapts existing resource material to include key messages on physical activity, and provincial Heart and Stroke Foundations increase efforts to promote walking.
- The Culture, Heritage, Recreation and Sport Division of the PEI Department of Education is piloting an exercise and diabetes program and resource kit, which it hopes to make available province-wide.
- The Cape Breton Wellness Centre is developing an active workplace initiative that will be piloted in a small business setting.

A few organizations stated that they are considering developing or expanding primary prevention or wellness initiatives that will promote both nutrition and physical activity:

- The Canadian Diabetes Association, at both the national and regional levels, is considering a variety of ways to increase primary prevention activities, including developing new resource material and community outreach and worksite programs.
- The Nova Scotia Healthy Weights working group intends to develop a strategy and take on a number of initiatives in the coming months.
- The Atlantic Health and Wellness Institute (Halifax) is piloting a variety of workplace wellness programs and intends to market these to businesses across the Atlantic region.
- In New Brunswick, nurses are being hired in each of 18 school districts to assist in coordinating school health promotion and wellness programs for elementary students. The provincial government is also working on a provincial wellness strategy.
- The East Prince Health Region in Prince Edward Island is developing a regional wellness approach.
- As part of the Provincial Diabetes Program, each of Prince Edward Island's health regions is setting up a multidisciplinary team to address diabetes services, and some funding has been allocated for primary prevention. How this will be used has not yet been decided.
- Newfoundland's Diabetes Advisory Committee is planning a study of the incidence and prevalence of diabetes in the province. Prevention will be part of the strategy developed after the study is completed.
- The Diabetes Care Program of Nova Scotia intends to make increased use of its newsletter and other vehicles to disseminate messages on prevention, partnerships and community capacity-building to diabetes health care providers.

And finally, to improve nutrition, the New Brunswick Department of Health and Wellness is considering a pilot project entitled Eating Well in New Brunswick.

CONCLUSIONS OF THE SURVEY

The purpose of the diabetes prevention survey was to gain a better understanding of the existing infrastructure for preventing diabetes. While these results provide a broad picture of the prevention activity in the region, they tell only part of the story. Not every significant major initiative was captured in the environmental scan, and few local initiatives were. Even so, the survey tells a story of a patchwork of various partnerships, programs and resources that contribute in a small way to diabetes prevention. The major findings of the survey regarding our prevention infrastructure are summarized below:

- Until now, diabetes prevention as such has not been a high priority in the region, though many organizations carry out prevention activities.

- Many people contacted were unclear about how to prevent diabetes.
- Although there are no population-wide strategies to prevent diabetes, there are population-wide strategies that address the risk factors for diabetes.
- Many population-wide initiatives aim to reduce physical inactivity, and these are led by the recreation sector.
- A few population-wide initiatives aim to reduce obesity (by both reducing inactivity and improving nutrition). Such initiatives are led by the health sector, most notably (but not only) by groups aiming to reduce cardiovascular disease.
- The few population-wide initiatives that aim to improve nutrition are led by nutritionists in the health sector.
- Many more initiatives to promote nutrition and/or reduce obesity have the potential to be population-wide, but are not widely available due to lack of human resources.
- Increasing knowledge and skills of individuals is still the primary approach to bringing about behavioural change for many organizations and initiatives.
- Most of the population-wide, multisectoral initiatives are in the early stages of development and have not yet acquired funding or developed strategies. A few are coming to the end of their funding.
- Overall, few initiatives are multisectoral and even fewer involve both the recreation and health sectors working together. There are very few partnerships with the food industry.
- Resources, knowledge and skills for promoting population health are insufficient.

All of these findings point to the importance of a concerted effort to prevent diabetes and suggest that much of the infrastructure we need for developing a prevention strategy already exists in the region. The few existing population-wide multisectoral initiatives present an important foundation on which to build a diabetes prevention strategy. These findings and their implications for a prevention strategy are discussed in section four.

section four

CONCERTED ACTION TO PREVENT DIABETES

Diabetes is a serious public health issue that requires immediate and concerted action. Increasing rates of inactivity, obesity and diabetes, together with our rapidly aging population, present a situation that will be difficult not only for the individuals and families affected, but also for the entire health care system. A population health strategy to reduce the prevalence of Type 2 diabetes is a timely and critical response to these challenges.

Section four integrates the information from section one about successful population health promotion programs with what we know about current rates of diabetes (section two) and current efforts to prevent it (section three). It identifies some of the actions required for the development of a population health strategy to prevent diabetes. The section is organized according to the key principles of a population health approach as listed on pages 4 and 5.

Population-wide Programming

A population health approach targets the entire population or significant sub-populations rather than individuals or small groups. The distribution of diabetes in the region tells us that physical inactivity, obesity and diabetes are problems across all sectors of our population: men and women, young and old, rich and poor, and people of every culture. While some people are at greater risk than others of developing diabetes, we are all at risk of developing the consequences of high fat diets and sedentary lifestyles. Preventing diabetes truly requires a population-wide approach.

None of the current activity specifically aimed at preventing diabetes in the region is population-wide. Rather, it is aimed at individuals or delivered occasionally to small groups. Conversely, many of the initiatives to reduce inactivity and obesity are population-wide or have the potential to be so if resources were available. Most of the work of provincial recreation organizations (government and non-government) is population-wide. In the health sector, population-wide initiatives are less often the case, with considerable effort going to initiatives such as individual risk assessment and counselling and to various localized small-group programs aimed at increasing the knowledge and skills of participants. Where population-wide programs do exist, they are more often available in only one health region in a province. Most of the prevention

work of health charities has the potential to be population-wide, but these organizations generally have insufficient resources to promote their programs as broadly as they would like.

There is clearly a need to develop population-wide approaches to promoting healthy weight and preventing obesity and to supporting the existing initiatives aimed at reducing inactivity. Whether there is a need to develop population-wide programming for diabetes prevention as such is less certain. As illustrated in Figure 9, programs to prevent the development of the two risk factors, obesity and inactivity, will achieve the same results as diabetes programs. Efforts to address the risk factors without tying them to any particular disease condition will likely be far more effective by reducing duplication and attracting a broader range of partners.[24]

For many professionals in health and other sectors, working with populations rather than individuals requires new knowledge and skills as well as supportive organizational structures. The first step in reorienting prevention work to a population focus will be to build capacity in both organizations and individuals.

Action required:

- Build capacity in organizations and individuals to develop and implement population-wide programs.
- Support or expand existing population-wide programs to reduce inactivity and obesity where they exist.

Intersectoral Collaboration

A population health approach recognizes that the health sector alone can't accomplish population-wide changes and that those working in the health sector must forge new relationships with groups not normally associated with health but whose activities have an impact on health. Important partners for preventing diabetes include national, provincial and regional government and non-government organizations in the health, recreation, education, social service and environment sectors, the food and food service industries, and communities.

Interestingly, as far as preventing Type 2 diabetes is concerned, much of the current effort is not led by the health sector at all, but rather by the recreation sector. Most of the work of the recreation sector to prevent inactivity is carried out through partnerships. Noteworthy are the province-wide intersectoral partnerships set up in every province in response to a national framework for action on physical inactivity published in 1997.[25]

Even so, there are relatively few examples overall of the health and recreation sectors working together in partnership. Because physical inactivity is one of only two known modifiable risk

factors for diabetes it is more important than ever for the health sector to use the expertise of the recreation sector in addressing diabetes.

Making inroads into the second risk factor, obesity, requires improvements in the nutritional quality of our Atlantic Canadian diet. This in turn requires significant changes in the way food is processed, marketed and distributed in the region. So far, only a very few initiatives have involved the food industry as partners. When considered at all the food industry is more likely to be seen as either a problem or a potential funder, not a full partner.

Those working in the health sector need to invite more partners to the decision-making table when planning strategies to address nutrition, obesity and diabetes. The recreation, health and food industry sectors must work together and with others on these challenging issues. By working together across sectors, organizations will multiply the available resources, get a much clearer understanding of what can be done and how, and develop the lasting relationships that can lead to long-term success.

Action required:

- Build capacity in organizations and individuals to work intersectorally to promote population health.
- Support existing province-wide intersectoral partnerships to reduce physical inactivity.
- Develop and/or support province-wide intersectoral partnerships to address healthy weight that include all levels of government and the health, recreation and food industry sectors.
- Increase the use of intersectoral partnerships for planning initiatives in the areas of nutrition and healthy weight.

Action on Root Causes

Creating environments that support active lifestyles and healthy weights requires that we look at and act upon the broad range of factors and conditions that have a strong influence on health. This is still a new way of thinking for many people in the health sector; overall, much of the work that contributes to preventing diabetes in the Atlantic region is still aimed at increasing the knowledge of individuals. There appears to be some uncertainty about what is meant by acting on the factors we now call *the determinants of health*, and a limited range of approaches for doing so. This is probably at least partly a result of the scarcity of multisectoral partnerships. Actions on the determinants of health that can be taken by those in the health sector working alone are clearly limited.

Work on root causes, when it does occur, is primarily aimed at building social support networks or improving social and physical environments. We have a wide variety of examples of ways to

improve physical environments, including active transportation programs and programs to develop trails, bikeways and other recreation facilities.

A great deal of research has demonstrated that the determinants of health create conditions for overall health or illness. It is interesting therefore to see, at least in the Atlantic region, that income does not appear to be predictive of the prevalence of diabetes and that education has less impact on the disease here than it does elsewhere. This is a good reminder that the conditions required to create optimum health overall are not likely to be the same conditions that prevent every specific disease condition. Although it would be premature to draw strong conclusions about the relationships between income, education and diabetes from a single study, these unexpected results do point to a need for further investigation in this area.

Action required:

- Build capacity in organizations and individuals to act on the root causes of poor nutrition and inactive lifestyles.
- Increase efforts to create environments that are conducive to healthy eating and physically active lifestyles.
- Investigate the relationship between diabetes, income and education in the Atlantic region.

Multiple Strategies and Sustained Effort

A population health approach recognizes that a population-wide change takes time and that no single intervention will be successful. Achieving complex behavioural changes throughout the population will require a long-term commitment that includes multiple interventions carried out at different levels over a period of time. The range of interventions required includes building healthy public policy, creating supportive environments, strengthening community action, developing personal skills and reorienting health services. No existing organization in the region acting alone has the resources to mount and sustain this kind of effort. Support for infrastructure that can coordinate the action of numerous organizations is clearly necessary.

A few organizations in the region, all broad partnerships, are using multiple strategies for preventing inactivity or obesity. These will be important models that others can learn from, but their ability to sustain these partnership activities over time is uncertain, as few have an ongoing source of funding. Lack of resources for sustaining strategies over sufficient time to achieve an impact is an important issue.

Action required:

- Build capacity in organizations and professionals to use the full range of population-level strategies to improve nutrition and physical activity.
- Support the infrastructure to coordinate the work of numerous organizations.

- Develop long-term provincial strategies to address inactivity and obesity.
- Make long-term commitments to implement these strategies.

Evidence-based Planning

A population health approach bases policy and program decisions on sound evidence. Three kinds of information are essential for a strategy to prevent diabetes: statistical and demographic data to describe and monitor the current situation, evidence of what works based on published research, and community knowledge.

The National Population Health Survey, the Physical Activity Monitor and provincial diabetes registries (where they exist) provide excellent province-wide data for planning and monitoring larger initiatives, as will the forthcoming National Diabetes Surveillance System. Most of the multisectoral partnerships addressing the risk factors in the region recognize the value of local data and a few are gathering baseline data before implementing a strategy.

Measuring outcomes to demonstrate their effectiveness is an important component of several nationally led initiatives and for those associated with university research departments. Many region-wide initiatives are able to demonstrate their success with evaluation data – or hope to once their evaluation is completed. More initiatives are still not evaluated at all – or if they are evaluated, the evaluation looks at process and satisfaction measures rather than outcomes. Given that many of the outcomes associated with health promotion only occur after many years, collecting outcome data requires skills and resources that may be beyond the capacities of many organizations.

While evaluation and access to local data are essential to population health strategies, they are only part of the evidence picture. Both obesity and physical inactivity are complex issues that require complex responses. Any strategy to reduce these risk factors must be based on a clear understanding of what works. While there are no easy answers, the WHO document *Obesity: Preventing and Managing the Global Epidemic* provides an excellent review of the literature on prevention of overweight and inactivity. Organizations, professionals and volunteer decision-makers all need increased access to the research literature as well as the skills to interpret and use research results to make informed decisions.

Action required:

- Increase access of professionals and decision-makers to the results of research on the prevention of obesity and inactivity.
- Increase the ability of health and recreation professionals to use research results for policy and program planning.
- Increase the capacity of organizations to perform outcome-based evaluation.

CONCLUSIONS

The results of this environmental scan indicate that the population health approach to preventing diabetes is a new way of thinking for many people in the region. To translate this new way of thinking into new ways of acting, it will be necessary to increase the level of commitment and capacity within the organizations that are doing the work. A successful diabetes prevention strategy will thus require concentrated efforts to increase the capacity of organizations and individuals to work in collaboration with other sectors and to create environments and conditions that encourage healthy choices. These efforts must include training, resource material, access to information about what works, and adequate financial and human resources to reorient, coordinate and implement primary prevention programs.

The results also suggest that preventing diabetes will require two separate but related strategies, one for each of the two modifiable risk factors. In every province intersectoral partnerships to reduce inactivity have been created in response to a national policy framework, and work is well underway. These partnerships are an important first step for preventing diabetes, but they will need to take strong, sustained and well-designed measures in order to bring about measurable changes in behaviour. To do so they will need both political and financial support.

Province-wide intersectoral partnerships for improving nutrition are not as well developed. In some provinces, heart health projects have developed strong partnerships and implemented strategies within a single health region. This expertise and the infrastructure that has developed over the past decade are important resources for provincial strategies to improve nutrition. However, achieving a measurable, population-wide impact on obesity will require a policy framework that provides political and financial support to build capacity and coordinate the work of many organizations.

The Canadian Diabetes Strategy provides an excellent opportunity to improve population health for the new century. With adequate support, there already exist within the region all of the resources needed to take coordinated action to prevent diabetes. Major steps taken now will require additional funding, but to do nothing will in the end cost far more. A concerted effort to prevent inactivity and obesity now will bring results that extend far beyond diabetes to the prevention of other non-communicable diseases. In doing so, it will improve quality of life and reduce health care costs for decades to come.

Both government and non-government organizations across the region have developed a wide range of initiatives that contribute to the prevention of diabetes, including partnerships, resource material, services and programs that meet the particular needs of people at each life stage. The programs and the expertise that reside within these organizations provide a foundation for developing provincial population health strategies for reducing inactivity, obesity and diabetes.

While few of the current initiatives can have a widespread impact acting alone, every one of them can play an important role as part of a coordinated policy framework.

ENDNOTES

1. Health Canada, Laboratory Centre for Disease Control (1999) p 4.

2. WHO Study Group on Prevention of Diabetes Mellitus (1994).

3. The four components of the Canadian Diabetes Strategy are: 1) National Coordination; 2) The Aboriginal Diabetes Initiative; 3) The National Diabetes Surveillance System; and 4) Prevention and Promotion.

4. Definitions offered for the three levels of diabetes prevention were developed for the Canadian Diabetes Strategy for consistency purposes, by the Population and Public Health Branch of Health Canada in Ottawa in consultation with the Prevention and Promotion Steering Committee. They are based on two sources: the WHO Study Group on the Prevention of Diabetes Mellitus (1994) and Saskatchewan Health (1999).

5. This section draws heavily and shamelessly on two excellent documents: Saskatchewan Health (1999) and the WHO Consultation on Obesity (1997), Ch 9: *The prevention and management of overweight and obesity in populations: A public health approach.* There did not seem to be any compelling reason to try to find different words to say what these works have said so well. However, this section cannot nearly do justice to all of the rich information in these two documents. Readers are strongly urged to obtain the originals.

6. Health Canada, Laboratory Centre for Disease Control (1999) p 48.

7. For a good review of this research see Kriska (1997).

8. Federal-Provincial/Territorial Advisory Committee on Fitness and Recreation (1997) p 6.

9. WHO Consultation on Obesity (1997) p 186.

10. WHO Consultation on Obesity (1997) p 108.

11. Population Health Research Unit (1999) p 1.

12. World Health Organization (1986) The Ottawa Charter for Health Promotion.

13. WHO Consultation on Obesity (1997) p 196.

14. The National Diabetes Surveillance System is one of the four components of the Canadian Diabetes Strategy. The purpose of the NDSS is to develop a nation-wide standardized surveillance system to capture data pertaining to diabetes and its complications in each province and territory. This will be accomplished through the integration of new and existing databases across the country. National comparative information will be disseminated to assist in the development of effective prevention and treatment strategies.

15. The National Population Health Survey (NPHS) is a longitudinal, household-based survey conducted every two years by Statistics Canada. 20,000 Canadians age 12 and over were surveyed in 1994-95 and 1996/97. Persons living in institutions, on reserves, or on Canadian Forces bases were not included in the survey. Response rates for both NPHS cycles were over 85%. Estimates calculated from NPHS data are accurate within 1 or 2 percentage points, 19 times out of 20.

16. Population Health Research Unit (2000).

17. LeBlanc (1998), LeClair (2000) and PEI Department of Health and Social Services (1999).

18. Personal communication, Rose Fraser, Black Women's Health Project, and Sharon Davis-Murdoch, NS Department of Health, July 2000.

19. Health Canada, Medical Services Branch (1997) p 6.

20. Lilley, S. and J.M. Campbell (1999) p 6.

21. The Physical Activity Monitor is produced annually by the Canadian Fitness and Lifestyle Research Institute. It is a telephone survey that tracks changes in physical activity patterns, factors influencing participation, and life circumstances in Canada. As such, it tracks outcome indicators of the efforts to increase physical activity among Canadians.

22. This document was produced as part of the Prevention and Promotion component of the Canadian Diabetes Strategy. Because diabetes is such a critical issue for the Aboriginal population, a separate component of the Canadian Diabetes Strategy, the Aboriginal Diabetes Initiative, is aimed specifically at this population group. In order to avoid duplication with work carried out under the Aboriginal Diabetes Initiative, the work reported in this report focuses on initiatives aimed at the general public and the non-Aboriginal population.

23. Pentz (1995).

24. The importance of focussing strategies on obesity per se rather than as a risk factor for a non-communicable disease such as diabetes is emphasized in WHO Consultation on Obesity (1997) p 170.

25. Federal-Provincial/Territorial Advisory Committee on Fitness and Recreation (1997).

27. The organizations listed are those that filled out and returned one or more copies of the diabetes prevention survey. Organizations that requested anonymity are omitted from this list. The initiatives listed are those for which information was provided. They are not meant to present a complete picture of activity in a province.

BIBLIOGRAPHY

Canadian Fitness and Lifestyle Research Institute. 1998. *The Physical Activity Monitor.* Ottawa. http://www.cflri.ca.

Federal-Provincial/Territorial Advisory Committee on Fitness and Recreation. 1997. *Physical Inactivity: A Framework for Action.* Ottawa.

Health Canada, Laboratory Centre for Disease Control, Diabetes Division. 1999. *Diabetes in Canada: National Statistics and Opportunities for Improved Surveillance, Prevention, and Control.* Ottawa.

Health Canada, Medical Services Branch. 1997. *Diabetes among First Nations people: Information from the 1991 Aboriginal People's Survey carried out by Statistics Canada.* Ottawa.

Kriska, A. 1997. Physical activity and the prevention of type II (non-insulin dependent) diabetes. *Research Digest* (Published by the (US) President's Council on Physical Fitness and Sports), 2(10): 1-7.

LeBlanc, J. 1998. The prevalence of diabetes mellitus in Nova Scotia: What can we learn from routinely collected health data? *Diabetes Care in Nova Scotia*, 8(4): 1-3.

LeClair, C.-A. 2000. *Étude sur l'incidence et la prévalence du diabète au Nouveau Brunswick.* École de nutrition et d'études familiales, Université de Moncton. Unpublished

Lilley, S. and J.M. Campbell. 1999. *Shifting Sands: The Changing Shape of Atlantic Canada.* Produced for the Health Promotion and Programs Branch, Atlantic Regional Office, Health Canada. Halifax.

Pentz, H.A. 1995. *Achieving Healthy Weights Discussion Paper.* Prepared for the Department of Health, Government of Newfoundland and Labrador. St. John's.

Prince Edward Island Department of Health and Social Services, Epidemiology Unit. 1999. *Diabetes Fact Sheet: Diabetes in Prince Edward Island.*

Population Health Research Unit. 2000. *A Diabetes Profile of Atlantic Canada from the National Population Health Survey and the Nova Scotia Health Survey.* Unpublished document

produced for and available from the Population and Public Health Branch, Atlantic Regional Office, Health Canada.

Population Health Research Unit. 1999. *How to Find, Evaluate, and Use Applied Research in Evidence-based Planning.* Department of Community Health and Epidemiology, Dalhousie University, Halifax.

Saskatchewan Health. 1999. *Population Health Promotion in the Primary Prevention of Type 2 Diabetes.* Regina.

World Health Organization. 1986. *Ottawa Charter for Health Promotion.* Copenhagen: WHO Regional Office for Europe.

World Health Organization Consultation on Obesity. 1997. *Obesity: Preventing and managing the global epidemic.* Geneva. http://www.who.int/hlt/.

World Health Organization Study Group on Prevention of Diabetes Mellitus. 1994. *Prevention of Diabetes Mellitus.* Technical Report Series, No 844. Geneva.

appendix:
ORGANIZATIONS THAT RESPONDED TO THE SURVEY[26]

Contact Information	Initiatives Described
Active Living Alliance for Canadians with a Disability 4 Hunts Lane St. John's, NF A1B 2L3 Phone: (709) 737-3861 Fax: (709) 737-3883 Contact: Patrick Reddick, Chairperson hcc.redp@hccsj.nf.ca	Active Living Alliance for Canadians with a Disability, Newfoundland and Labrador Development Committee
Active Living Alliance NB 655 Main St. Moncton, NB E1C 1E8 Phone: (506) 853-3512 Fax: (506) 859-2629 Contact: Jocelyn Cohoon jocelyn.cohoon@moncton.org	NB Active Living Alliance for Canadians with a Disability
Association des travailleurs et travailleuses en loisirs du Nouveau-Brunswick Inc. 31 rue Sormany Edmundston, NB E3V 1Y3 Phone: (506) 736-0111 Fax: (506) 739-7568 Contact: Claude Lord, Directeur Générale lordcpro@nbnet.nb.ca	Sport, loisir, et vie active Réduction de 10% de l'inactivité physique chez les gens de 35-45 ans
Atlantic Health and Wellness Institute 6960 Mumford Rd., 2nd Fl Halifax, NS B3L 4P1 Phone: (902) 482-2494 Fax: (902) 482-2501 Contact: Lydia Makrides, Director ahwi@globalserve.net	Menopause and Health Smoking Cessation Stress Management Program Health and Wellness Program Weight Management Program Food for Health Individual Nutrition Counselling Heart Smart Cooking Course
Canadian Cancer Society 5826 South St., Ste. 1 Halifax, NS B3H 1S6 Phone: (902) 423-6183 Fax: (902) 429-6563 Contact: Judy Purcell Program Coordinator, Health Promotion nstn3332@fax.nstn.ca	Cancer Information Service (CIS) Growing up with Food

Canadian Cancer Society, PEI Division 1 Rochford St., Ste. 1 Charlottetown, PEI C1A 9L2 Phone: (902) 566-4007 Fax: (902) 628-8281 Contact: Holly Smith, Education Coordinator hsmith@pei.cancer.ca	5 to 10 a Day - Are You Getting Enough?
Canadian Diabetes Association PO Box 133 Charlottetown, PEI C1A 7K2 Phone: (902) 894-3005 Fax: (902) 368-1928 Contact: Shirley Berry, Executive Director berry@diabetes.ca	Activities unnamed
Canadian Diabetes Association 165 Regent St., Ste. 3 Fredericton, NB E3B 7B4 Phone: (506) 452-9009 Fax: (506) 455-4728 Contact: Jacqueline Alain, Executive Director alain@diabetes.ca	Workplace sessions
Canadian Diabetes Association, NS Division 101 - 6080 Young St. Halifax, NS B3K 5L2 Phone: (902) 453-4232 Fax: (902) 453-4440 Contact: Neala Gill, Manager, Programs & Services neala.gill@diabetes.ca	Food for Thought MLA Awareness Reception Health displays and education sessions
Cancer Care Nova Scotia 1278 Tower Rd, Bethune Building, Room 540 Halifax, NS B3H 2V9 Phone: (902) 473-3675 Fax: (902) 473-4631 Contact: Karen Pyra, Prevention Coordinator cckdp@qe2-hsc.ns.ca	Collaborative Action to Promote Healthy Weights
Cape Breton Wellness Centre PO Box 5300 Sydney, NS B1P 6L2 Phone: (902) 563-1422 Fax: (902) 563-1612 Contact: Stacey Lewis, Director cbwellness.centre@uccb.ns.ca	Greenlink Active Transportation Pilot.
Cheryl Turnbull Nutrition Consulting Charlottetown, PEI Phone: (902) 566-4847	Nutrition Consulting HUGS Lifestyle Program

Coeur en santé CEPS Louis-J-Robichaud, Université de Moncton Moncton, NB E1A 3E9 Phone: (506) 858-3771 Fax: (506) 858-4308 Contact: Pierre Boulay, Directeur boulayp@umoncton.ca	Programme Coeur en Santé
Culture and Sport Secretariat PO Box 6000 Fredericton, NB E3B 5H1 Phone: (506) 457-4950 Fax: (506) 453-6548 Contact: Roger Duval, Manager roger.duval@gnb.ca	Sport, Recreation and Active Living Branch
Culture, Fitness and Recreation Department of Education PO Box 2000 Charlottetown, PEI C1A 7N8 Phone: (902) 368-5509 Fax: (902) 368-4663 Contact: John Morrison jwmorris@gov.pe.ca	PEI "An Active Healthy Province by 2003" Active Living
Department of Health and Community Services PO Box 8700 St. John's, NF A1B 4J6 Phone: (709) 729-3940 Fax: (709) 729-5824 Contact: Eleanor Swanson Director, Planning and Evaluation	Healthy Eating, Active Living, Diets Don't Work
Department of Health and Community Services Eastern Region PO Box 38 Whitbourne, NF A0B 3K0 Phone: (709) 759-3365 Fax: (709) 759-3361 Contact: Betty Reid-White, Director, Community Health Nursing brwhite@chcsb.nfld.net	Community Diabetes Management Program Prevention program (not yet named)
Department of Health and Social Services - PEI PO Box 2000 Charlottetown, PEI C1A 7N8 Phone: (902) 368-6138 Fax: (902) 368-4969 Contact: Theresa Henneberry, Director of Public Health and Evaluation thennebery@gov.pe.ca	Provincial funding for primary prevention

Department of Health and Wellness - NB 520 King St. Fredericton, NB E3B 5G8 Phone: (506) 453-6369 Fax: (506) 453-8702 Contact: Gisèle McCaie-Burke, Project Manager gisele.mccaie-burke@gnb.ca	NB Strategy to Normalize Breastfeeding in the Province "Healthy Minds" School Breakfast Program Early Childhood Initiative (ECI) Nutrition Promotion/Education
Department of Tourism, Culture and Recreation PO Box 8700 St. John's, NF A1B 4J6 Phone: (709) 729-5281 Fax: (709) 729-5293 Contact: David Doyle, Recreation & Sport Consultant david.doyle@mail.gov.nf.ca	Summer Active Canada's Physical Activity Guide Wellness in the Workplace Regional Recreation Seminars/Workshops
Dietitians of Canada - Atlantic Office PO Box 24070 Dartmouth, NS B3A 2L4 Phone: (902) 461-1029 Fax: (902) 469-1039 Contact: Judy Jenkins, Regional Executive Director jjenkins@dietitians	Dietitians of Canada Web site
East Prince Health 271 Lidstone Ave. Summerside, PEI C1N 3G6 Contact: Maureen Paquet, Wellness Planner Phone: (902) 432-2896 Fax: (902) 436-0671 mppaquet@ihis.org	Wellness Days
École de nutrition et d'études familiales Université de Moncton Moncton, NB E1A 3E9 Phone: (506) 858-4285 Fax: (506) 858-4540 Contact: Lita Villalon, Directrice villall@u.moncton.ca	Étude sur l'incidence et la prévalence du diabète au Nouveau Brunswick
Healthy Active Living Program for Older Adults 236 Saint George St., Ste. 315 Moncton, NB E1C 1W1 Phone: (506) 869-6977 Fax: (506) 853-7856 Contact: Tamra Farrow, Provincial Coordinator mctnvol@nbnet.nb.ca	Healthy Active Living Program for Older Adults
Healthy Communities in Action PO Box 641 Souris, PEI C0A 2B1 Phone: (902) 687-7050 Fax: (902) 687-7049 Contact: Rhonda MacPhee, Health Promotion Nurse rpmacphee@ihis.org	Nutrition Working Group Stress Working Group Smoke-Free Working Group Community Research Associates Team Heart Checks

Heart and Stroke Foundation of NB 110 Crown St., Ste. 340 Saint John, NB E2L 2X7 Phone: (506) 634-1620 Fax: (506) 648-0098 Contact: Rosemary Boyle hsfofnb@nbnet.nb.ca	Workplace Wellness Heart Smart Cooking Speakers Bureau Hearts in Motion
Heart and Stroke Foundation of NS 5523 Spring Garden Rd. Halifax, NS B3J 3T1 Phone: (902) 423-7530 Fax: (902) 492-1464 Contact: Corinne Corning Director of Health Promotion ccorning@heartandstroke.ns.ca	Healthy School Award Hearts in Motion Heart Smart Restaurant Program Family Fun Pack Activities that Work Heart Smart Cooking Course Website: www.heartandstroke.ns.ca
Heart and Stroke Foundation of PEI PO Box 279 Charlottetown, PEI C1E 2Z8 Phone: (902) 892-7441 Fax: (902) 368-7068 Contact: Angela Davies Coordinator of Health Promotion Programs adavies.hsfpei@itas.net	Walking Clubs
Heart Health Partnership 5849 University Ave. Halifax, NS B3H 4H7 Phone: (902) 494-1960 Fax: (902) 494-1916 Contact: Jane Farquharson jane.farquharson@dal.ca	The Heart Health Partnership Research Project
Newfoundland and Labrador Parks/Recreation Association PO Box 8700 St. John's, NF A1B 4J6 Phone: (709) 729-3892 Fax: (709) 729-3814 Contact: Gary Milley, Executive Director nlpra@nf.aibn.com	Summer Active 10% Physical Inactivity Strategy Reducing Risk to Youth through Recreation Active Living Express
NS Sport and Recreation Commission PO Box 864 Halifax, NS B3J 2V2 Phone: (902) 424-7512 Fax: (902) 424-0520 Contact: Mike Arthur Director, Community Development arthurmh@gov.ns.ca	Physically Active Children and Youth (PACY) NS Trails Information Project Recreation Facility Development Program (RFD) Nova Scotia Outdoor Leadership Development Regional Services Funding Programs for Provincial/Municipal Groups

NS Sport and Recreation Commission - Western Region 28b Aberdeen St., Suite 2 Kentville, NS B4N 2N1 Phone: (902) 679-4390 Fax: (902) 674-6094 Contact: Mike Trinacty, Regional Representative trinacme@gov.ns.ca	Physically Active Children and Youth - Western Region
PEI Reproductive Care Program PO Box 2000 Charlottetown, PEI C1A 7N8 Phone: (902) 368-4952 Fax: (902) 368-7537 Contact: Janet Bryanton, Coordinator repcare@auracom.com	PEI Reproductive Care Program
Public Health Services, Northern Region 825 East River Rd., 2nd Fl. New Glasgow, NS B2H 3J6 Phone: (902) 752-5151 Fax: (902) 756-7175 Contact: Patrick Mullally, Health Educator pmullally@nrhb.ns.ca	Local Public Health Infrastructure Development
Public Health Services, Western Region 60 Vancouver St., 4th Fl. Yarmouth, NS B5A 2P5 Phone: (902) 742-7141 Fax: (902) 742-6062 Contact: Karen Blanchard, Manager	Prenatal Education Just for Girls - Body Image School Programs
Recreation Nova Scotia PO Box 3010 S Halifax NS B3J 3G7 Phone: (902) 425-1128 Fax: (902) 422-8201 Contact: Dawn Stegen stegenda@sportns.ns.ca	Building Healthier Communities Together Active Living Alliance for Canadians with a Disability Sense of Belonging: Video and Facilitators Guide
Region 3 Hospital Corporation c/o Oromocto Public Hospital, 103 Winnebago St. Oromocto, NB E2V 1C8 Phone: (506) 357-4710 Fax: (506) 363-2324 Contact: Bev Greene, Clinical Nurse Specialist r3bgreen@health.nb.ca	Community Action Groups Tobacco Cessation Education for Nurse Counsellors Healthy Weight / Scales Are for Fish Aging Well Chronic Care Management of Persons with Diabetes Foot Assessment Tool Screening for Diabetes
School of Health & Human Performance Dalhousie University 6230 South St. Halifax, NS B3H 3J5 Phone: (902) 494-1145 Fax: (902) 494-5120 Contact: Phil Campagna, Associate Professor campagna@is.dal.ca	The effects of a structured exercise program on risk factors in NIDDM A comparison of the Canadian Physical Activity Guide program versus the Digi-walker Step Counter program Physically Active Children and Youth research project

Sharing Strengths Box 1180 Wolfville, NS B0P 1X0 Phone: (902) 542-4028 Fax: (902) 542-4020 Contact: Cari Patterson, Coordinator patterc.fmh@wrhb.org	Sharing Strengths